

MI Demographics: Implications for Energy Transition

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Agenda

- Population: Characteristics, Distribution & Change
- Economics & Socioeconomic Dimensions
- Housing: Development & Characteristics
- Residential Energy Demand & Sources

Population Key Points

- Slow population growth- hit 10 million
 - West side, SE suburbs, Ann Arbor growing
 - East side decline
 - Natural decline
 - Limited +net migration (volatile)
- Increasing diversity- especially Latinx. 28% BIPOC
- Aging- especially NH white

Population Distribution

Census 2020
Blocks
1 dot- 50 pop
MI=
10,077,331

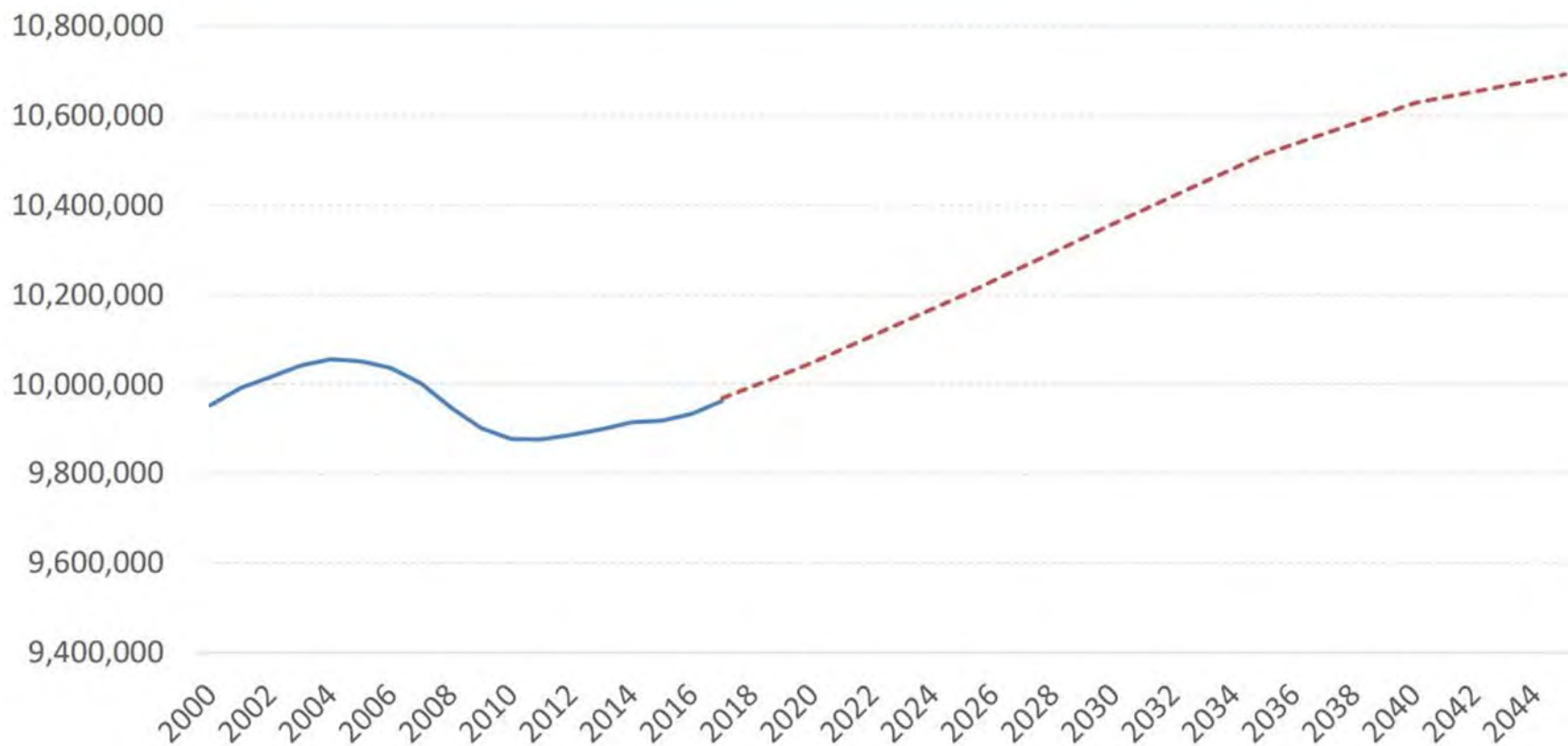


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Population Change

Michigan Projected Population



Source: U.S. Census Bureau, Population Estimates Program; MDOT and U-M's Institute for Research on Labor, Employment, and the Economy (IRLEE)

Population Change

2010-2020

MI= +193K (2%)

Growth:

Grand Rapids; Traverse City

Counties: Ottawa, Grand Traverse, Kent, Allegan, Washtenaw

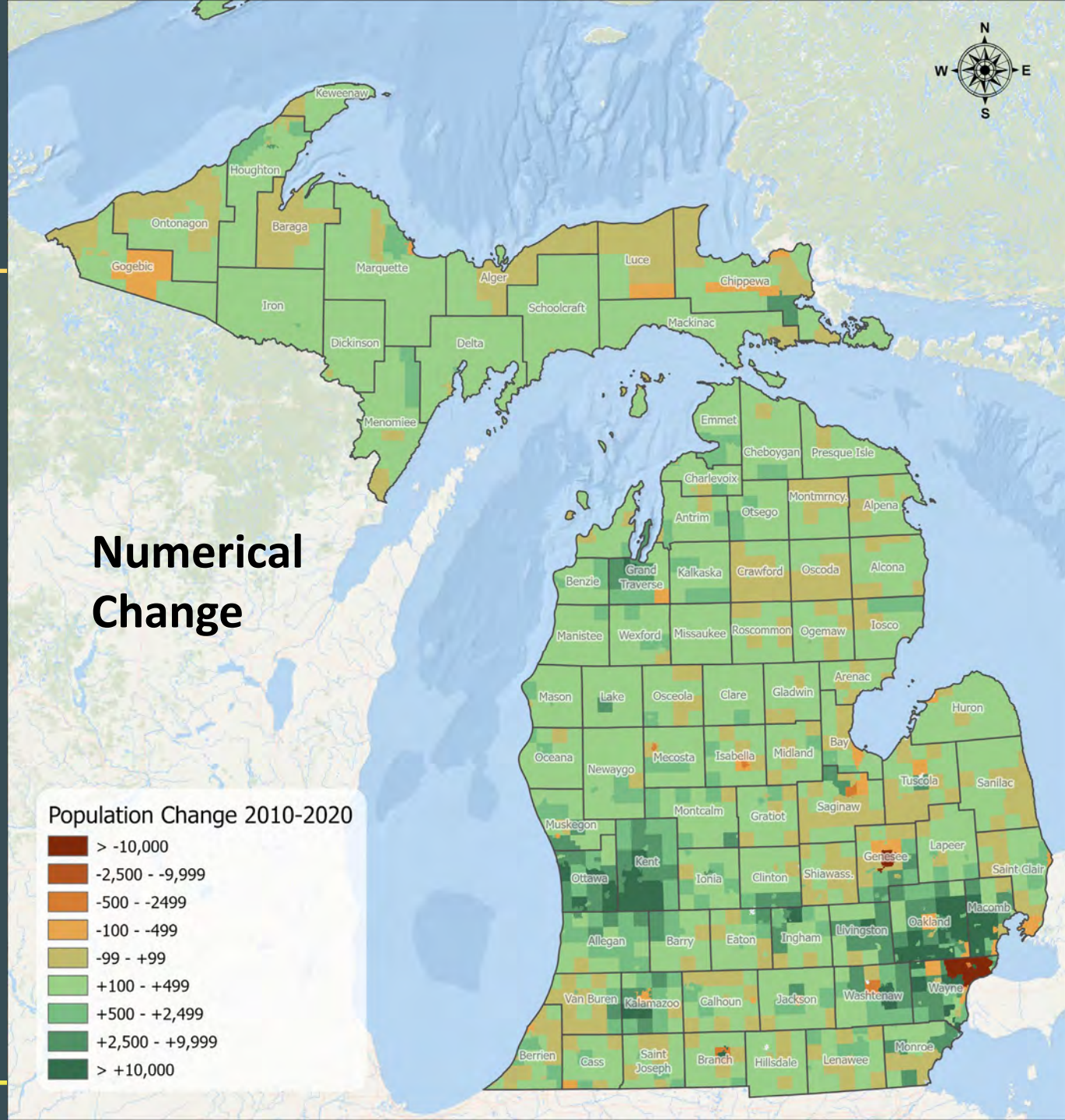
Decline: (undercount?)

Flint -20%; Detroit -6%
Lansing Kalamazoo
Saginaw

Greatest % loss in UP, only
Houghton Co. grew

Numerical Change

Population Change 2010-2020



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% Population Change: 2010-2020

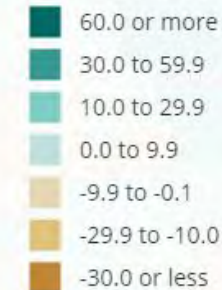
This map shows the percent change in total population from the 2010 Census to the 2020 Census at the state and county levels. Zoom in to see county-level data. Click on the map to learn more.

Legend

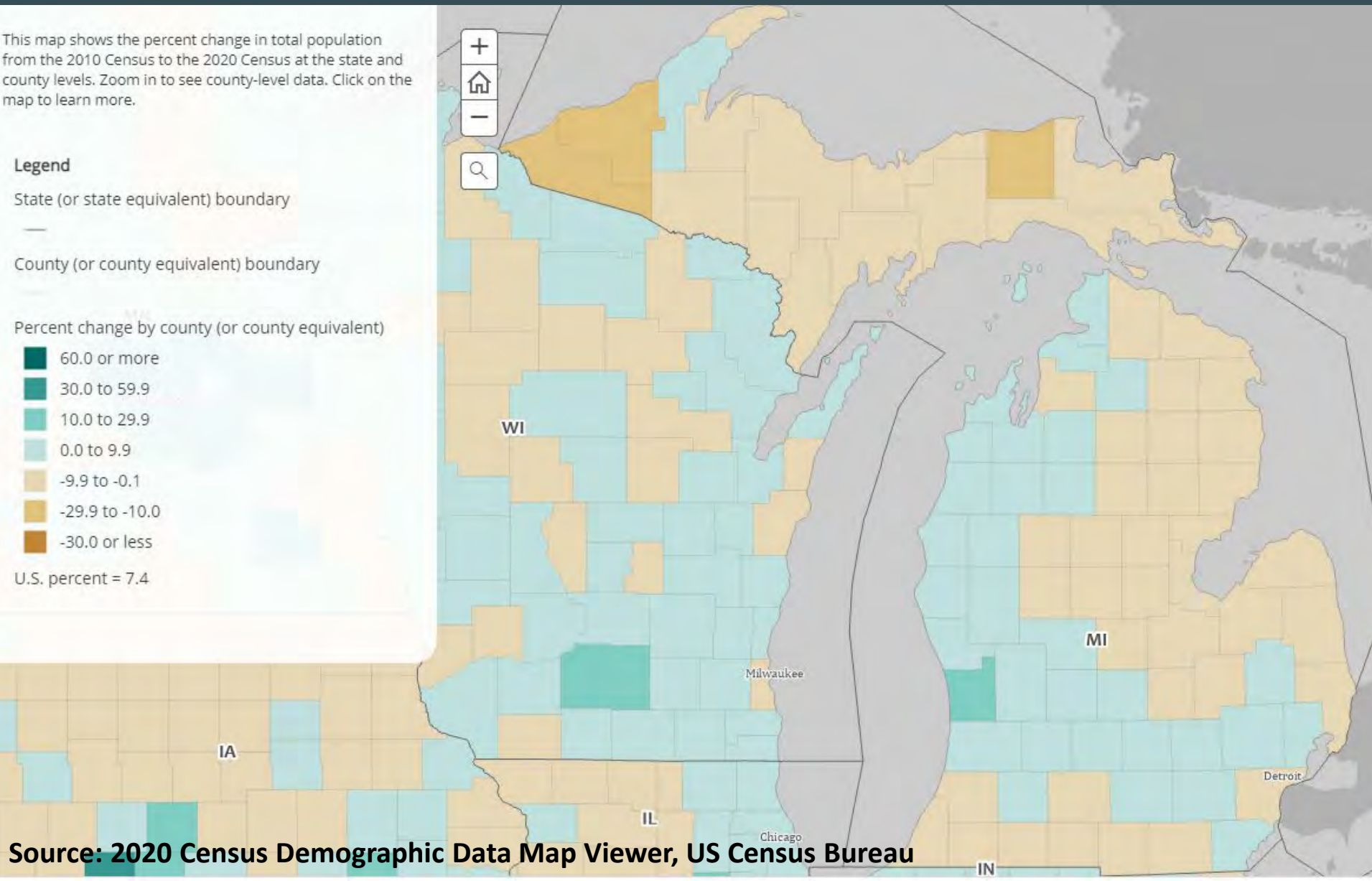
State (or state equivalent) boundary

County (or county equivalent) boundary

Percent change by county (or county equivalent)



U.S. percent = 7.4



Source: 2020 Census Demographic Data Map Viewer, US Census Bureau

People of Color

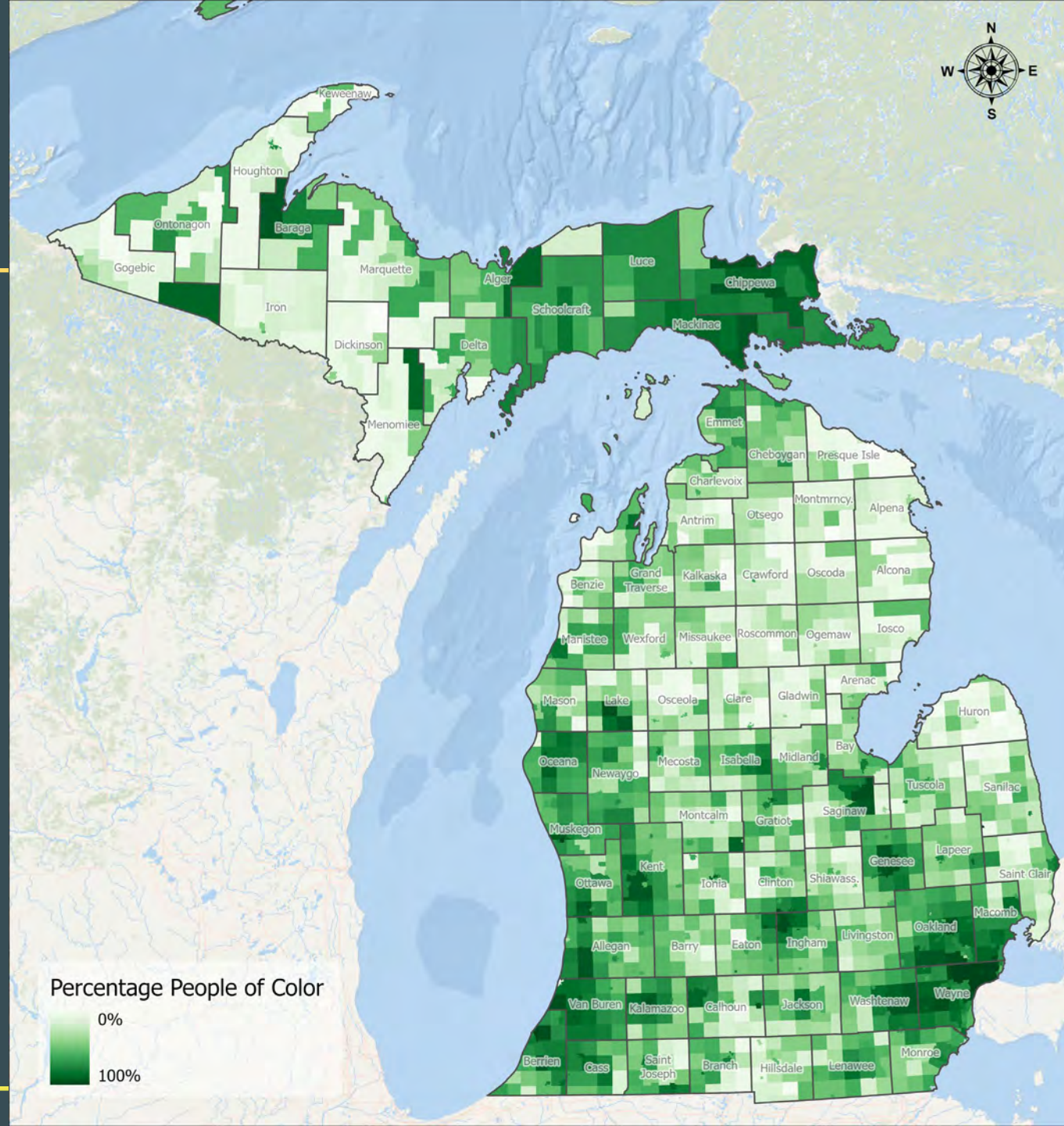
Census 2020
28% BIPOC
14% Black
6% Hispanic
6% Asian
1% AIAN

Growing
Hisp/Asian/
Multirace

Declining black (-
2%) and white (-
4%)



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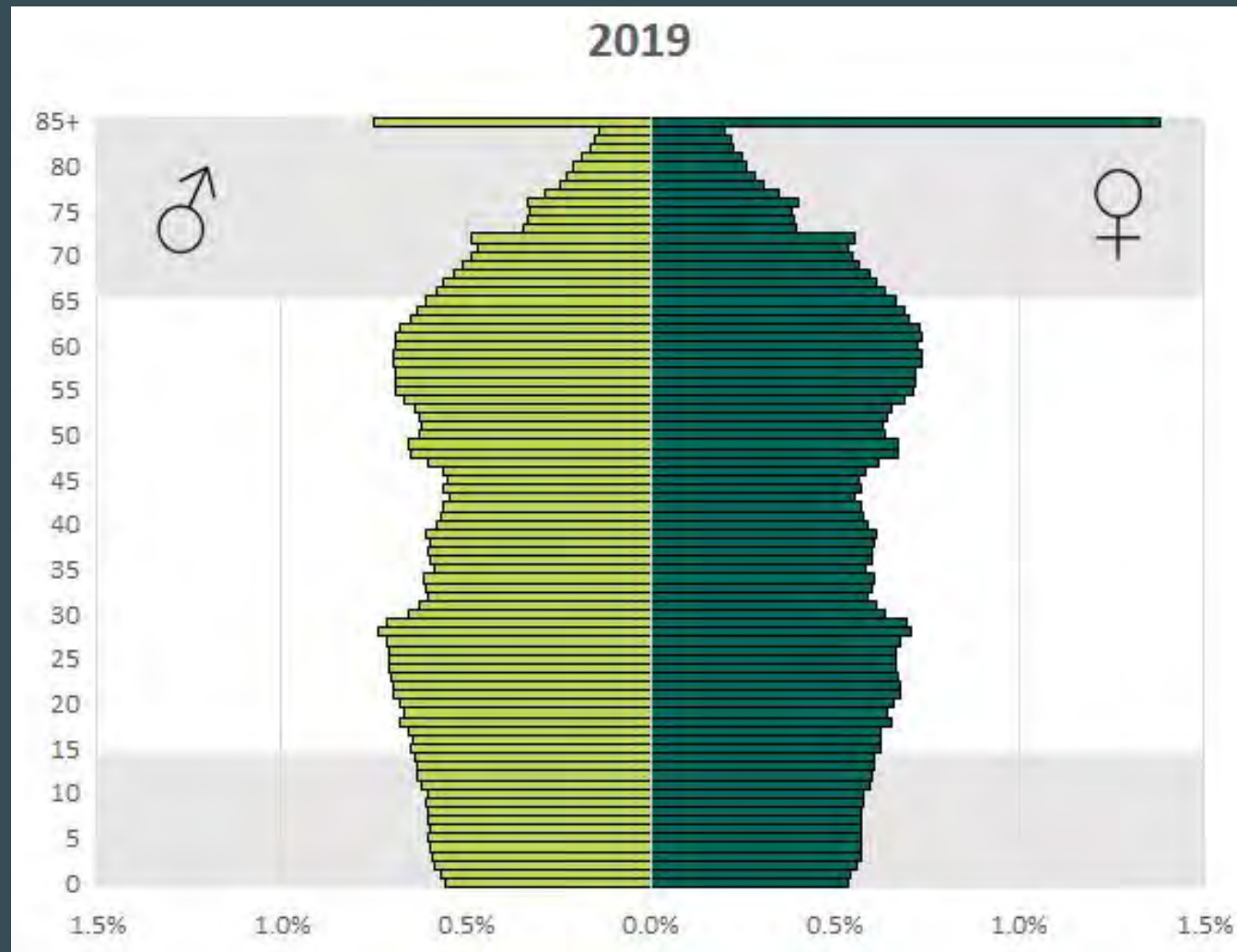


Age Structure

Aging
especially NH
whites

25% 60+

7% 75+



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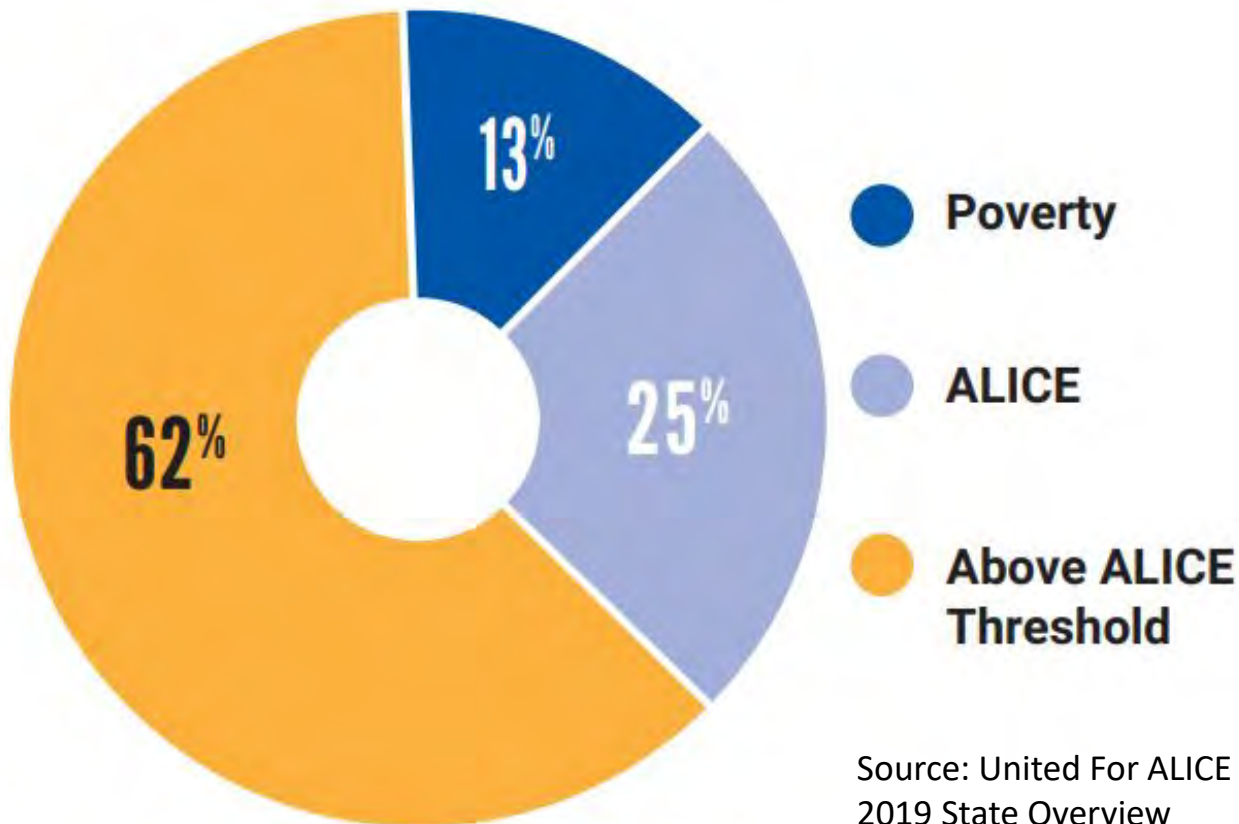
Source: Michigan Dept of Technology, Management & Budget

Economics Key Points

- Inequality is core issue
- Large and growing population in poverty
 - Rising costs and stagnant wages among lower income
 - Energy is one of those costs
 - Housing affordability
- Unemployment is falling but relatively high. Local Variations. Some quit looking.

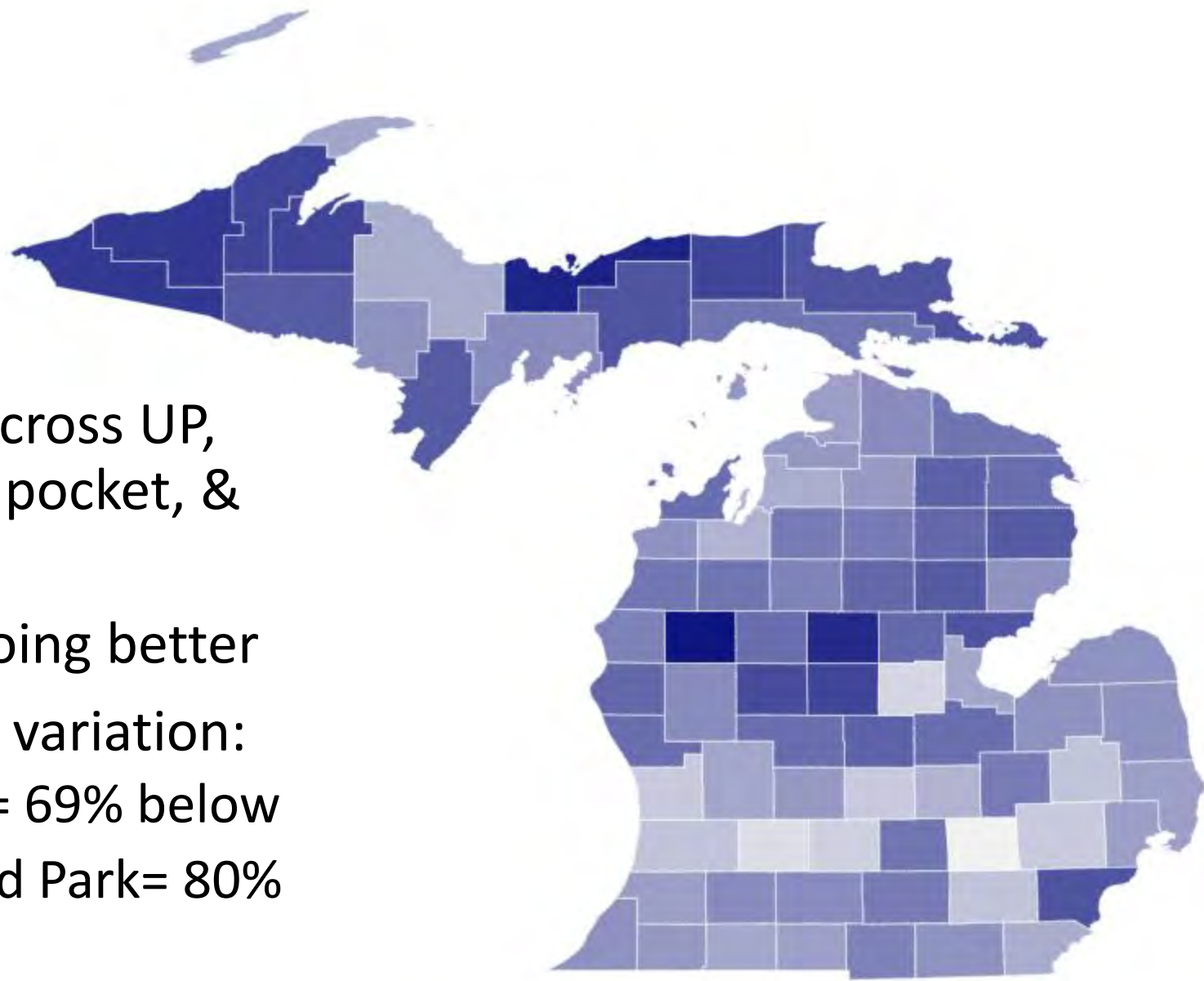
ALICE Poverty Threshold

- ALICE= Asset Limited, Income Constrained, Employed
- 38% of households in 2019 below ALICE

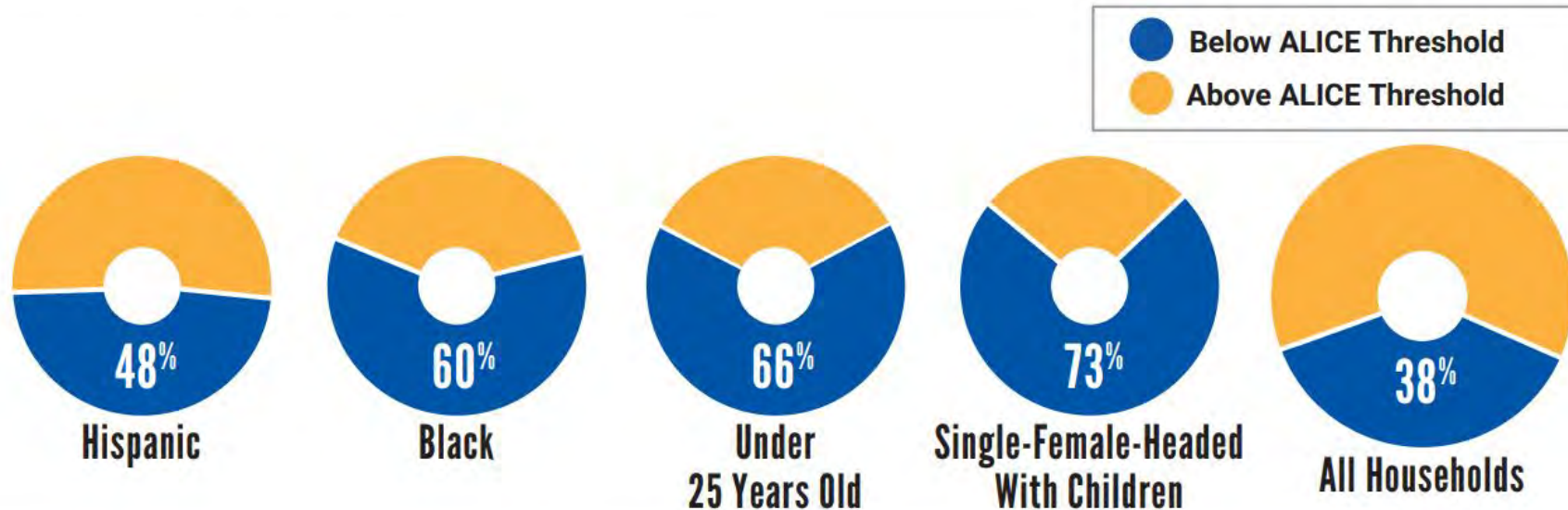


- Increasing #s. Stable %.
- Cost of living increasing for ALICE
- Instability & stagnant wages in ALICE jobs

- ~ 50% or across UP, central MI pocket, & Wayne Co.
- Suburbs doing better
- Within Co. variation:
 - Detroit= 69% below
 - Highland Park= 80% below



Select Household Groups by Income, Michigan, 2019

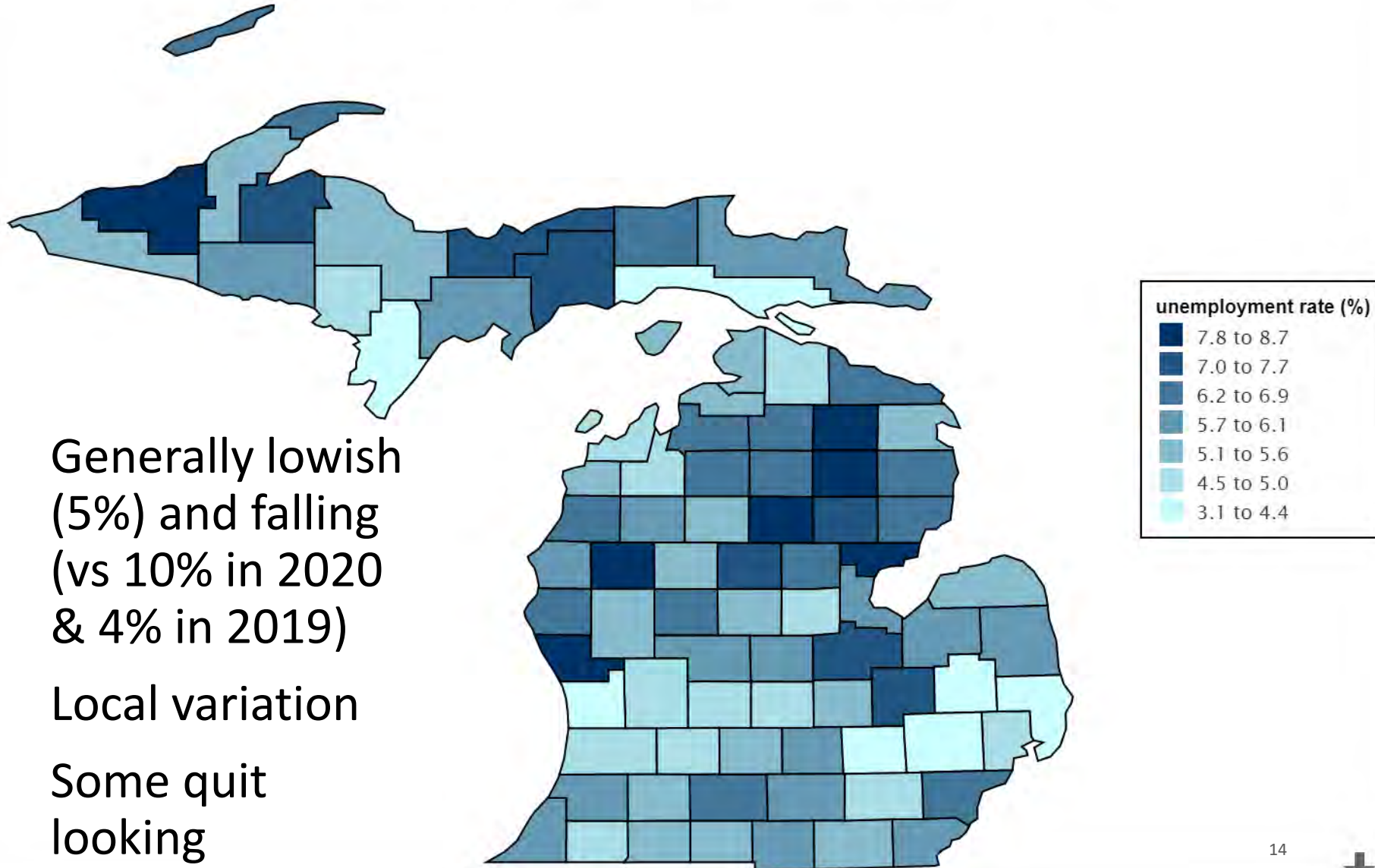


Total Households	142,266	531,943	151,516	240,969	3,963,558
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Sources: ALICE Threshold, 2019; American Community Survey, 2019

- ~ 50% or across UP, central MI pocket, & Wayne Co.
- Suburbs doing better
- Stagnant wages in ALICE jobs

Unemployment rates by county, not seasonally adjusted, Michigan June 2021



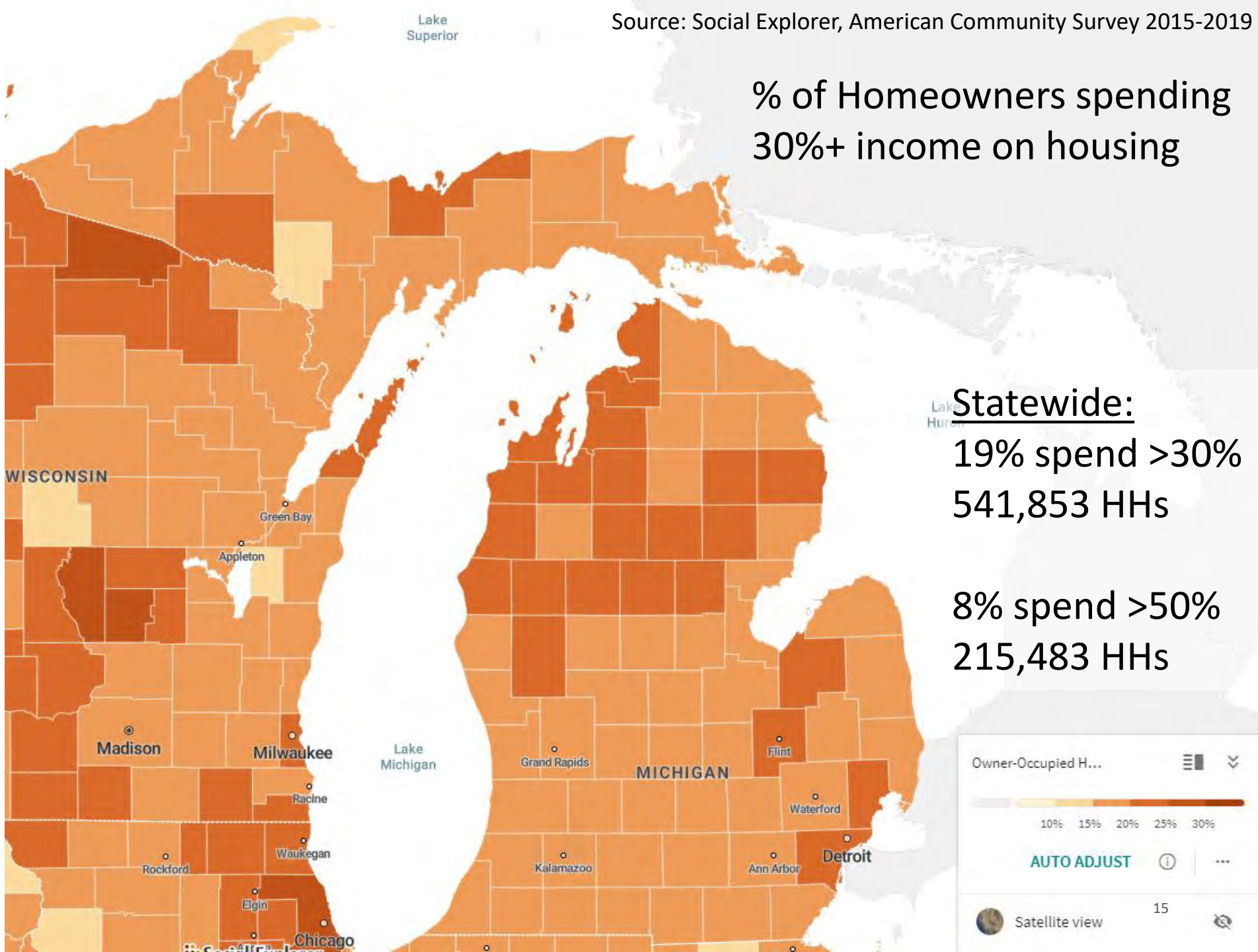
- Generally lowish (5%) and falling (vs 10% in 2020 & 4% in 2019)
- Local variation
- Some quit looking



% of Homeowners spending 30%+ income on housing

Statewide:
19% spend >30%
541,853 HHs

8% spend >50%
215,483 HHs



Housing Key Points

- Characteristics of housing matter for efficiency and energy use
 - Size & materials
 - Year Built
 - Single vs Multifamily vs Mobile:
 - SF/mobile 2x apartment
- Housing tenure
 - Consumption ~ 2x for owners vs renters
 - who you work with for what



Housing Size

- Avg HH size is decreasing, now ~ 2.5 PPH, more living alone
- US Census Bureau: Characteristics of New Housing– heating source, central air, size, stories, materials, etc.
- Nationwide Avg square feet:
 - 1973= 1660 sq ft --- 104 million Btu
 - 2015= 2,687 sq ft--- 119 million Btu
 - Source: EIA 2015 Residential Energy Consumption Survey, NE
 - 2020= 2,333 – millennials going smaller, but could be affordability & age



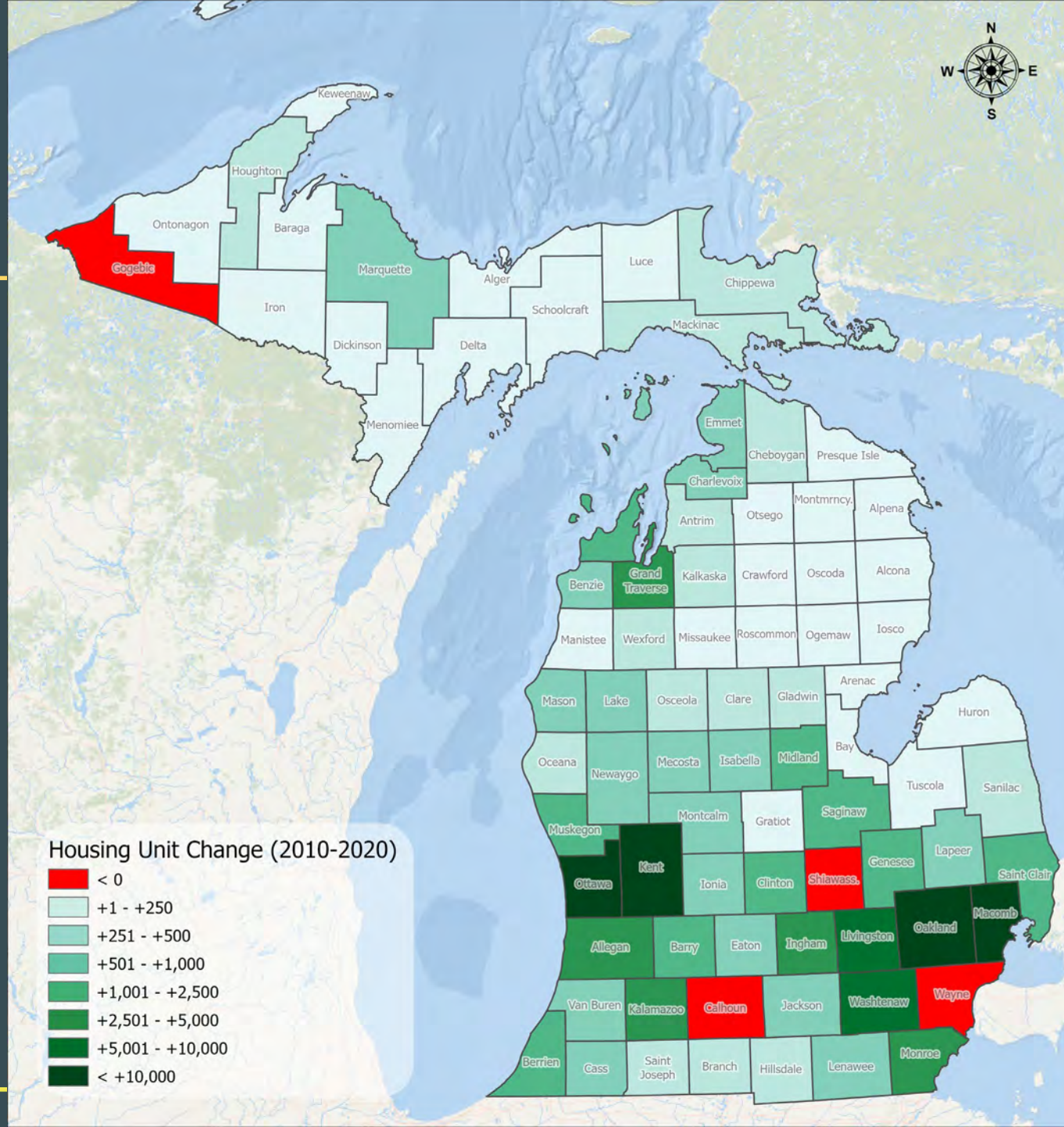
Housing Development

~113K new housing units 2010-2020

> Half in Oakland, Kent, Macomb & Ottawa Co.s



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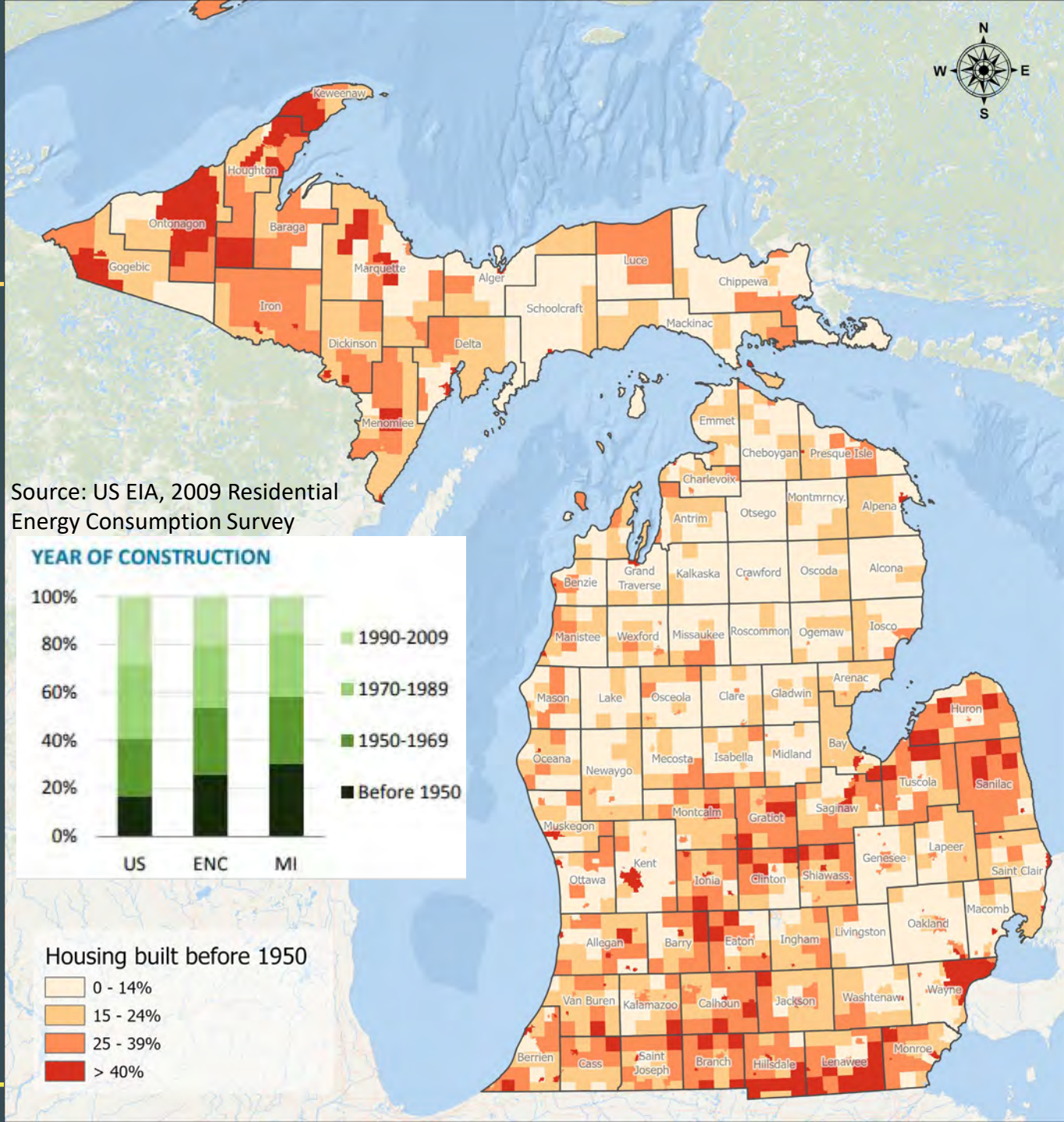


Older Housing

Median Year Built= 1971
22% pre 1950

35% age 65+ live in unit pre-1960

Built x Value



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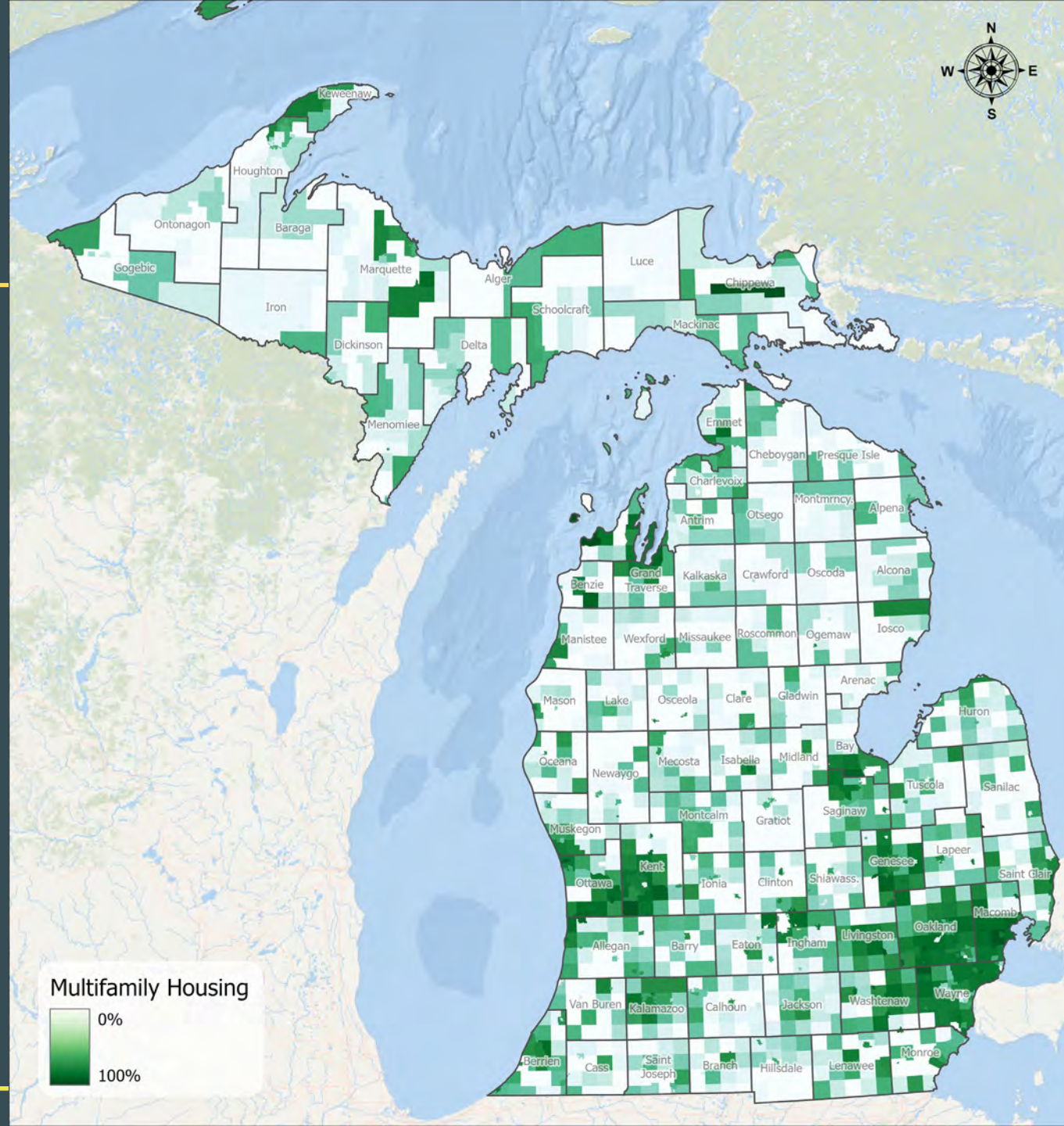
Multifamily Housing

72% SF detached homes

247,267(5%) mobile homes



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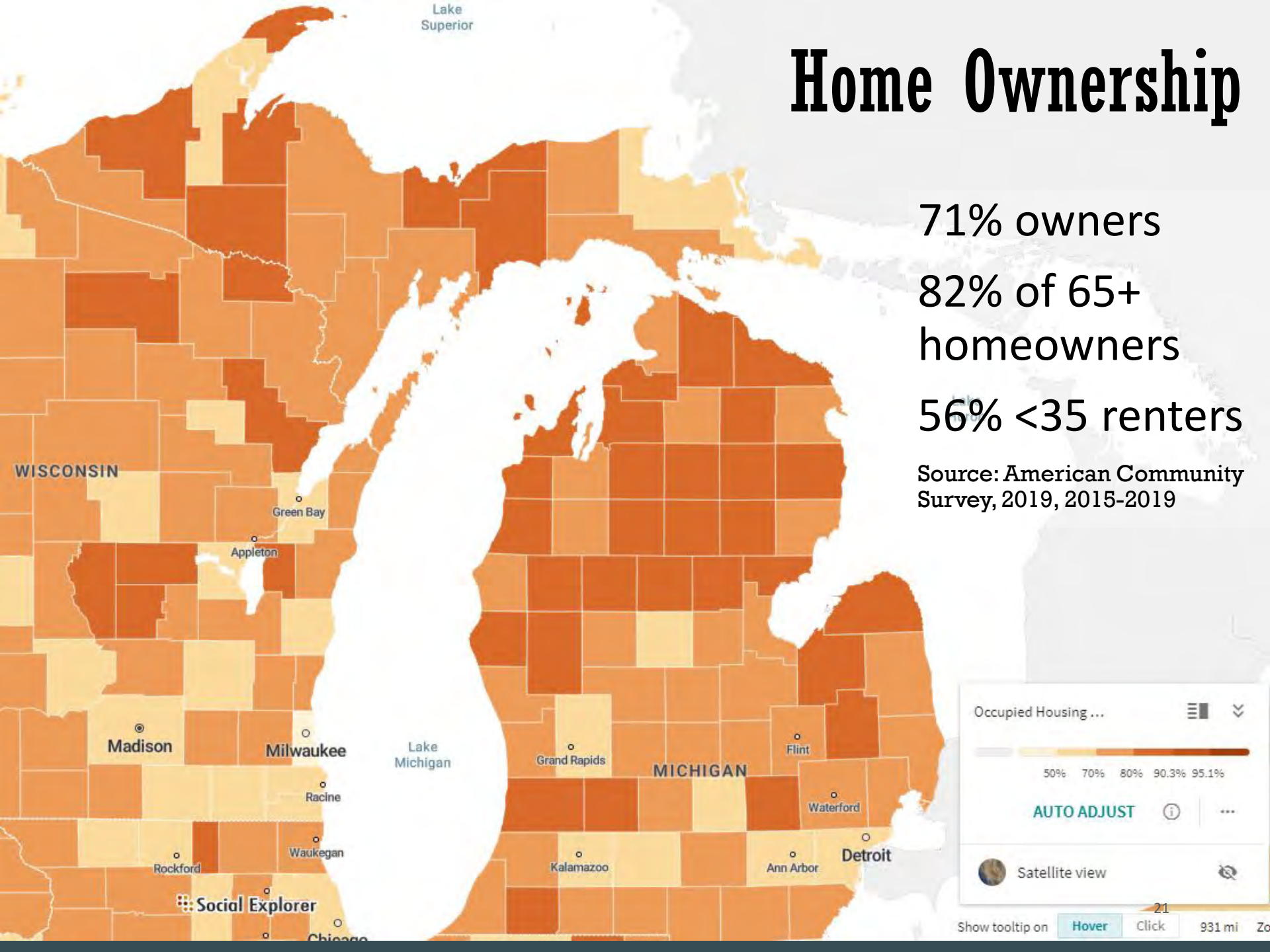
Home Ownership

71% owners

82% of 65+
homeowners

56% <35 renters

Source: American Community
Survey, 2019, 2015-2019



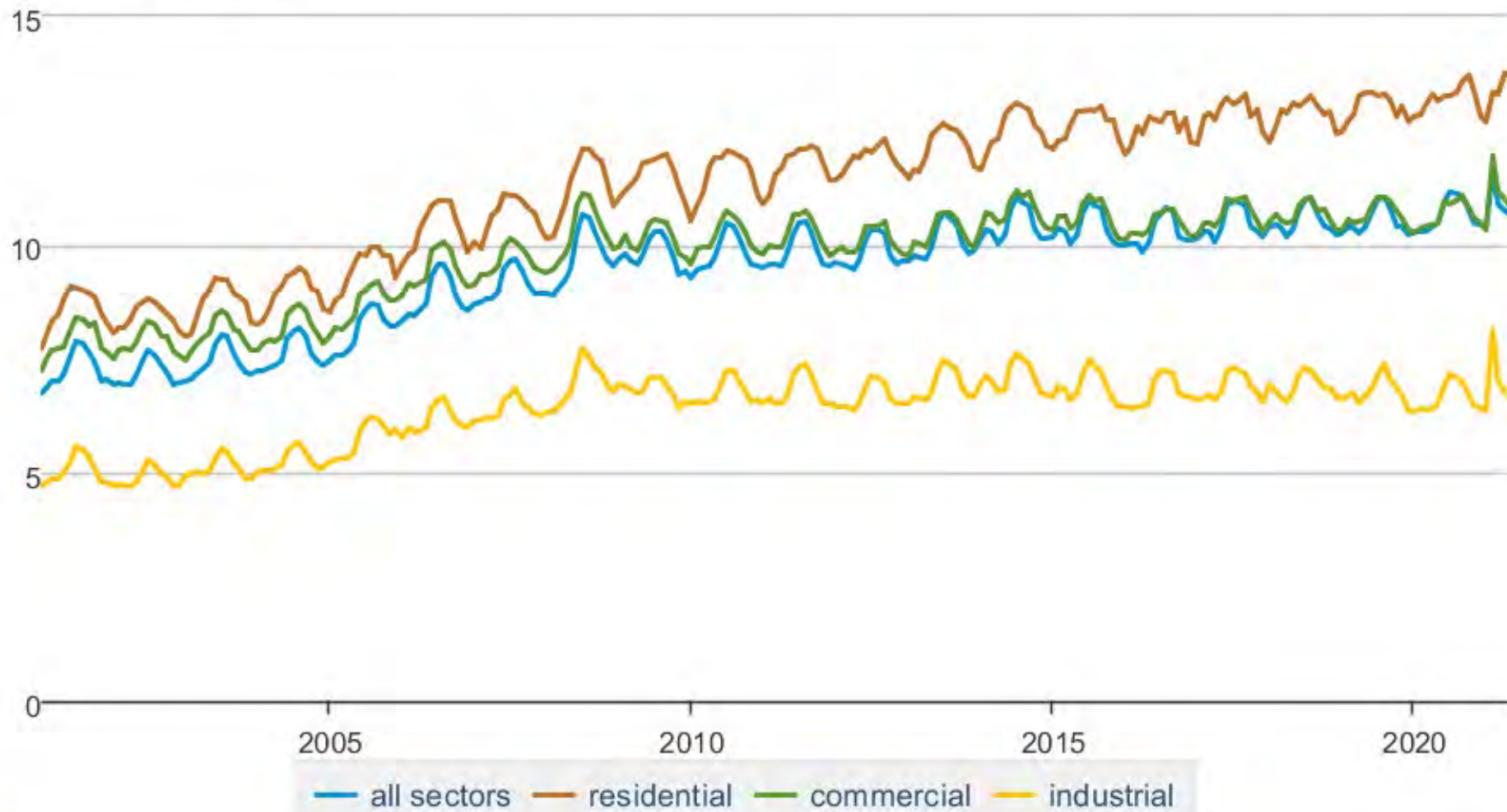
Energy Consumption: Key Points

- Residential consumption high in MI- 38% > US avg (2009- EIA Survey)
 - 55% HH energy use is space heating
- Utility costs: Energy Cost Burden
 - Layering data: Age; Race; Income; Unemployment; Rates; Housing Size/Value/Affordability/Age; Transport
- Heating fuel source impacts transition opportunities
- Transportation- high energy demand, HH differences



Average retail price of electricity, United States, monthly

cents per kilowatthour

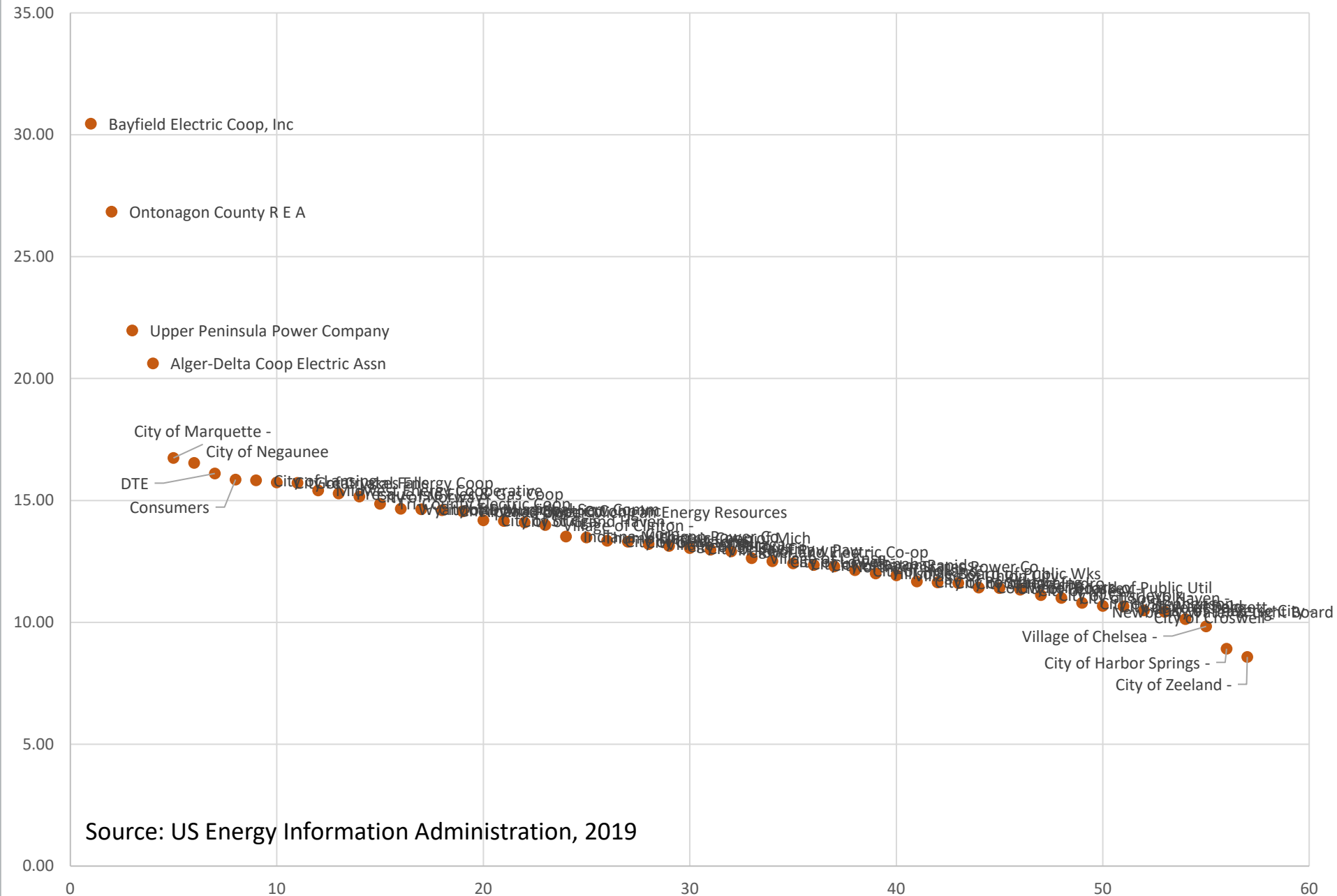


Source: U.S. Energy Information Administration

MI: Avg Monthly Electric bill= \$100.23

Source: US Energy Information Administration, 2019

Avg Price Electricity: cents/kwh by Utility



Heating Source

76% nat gas

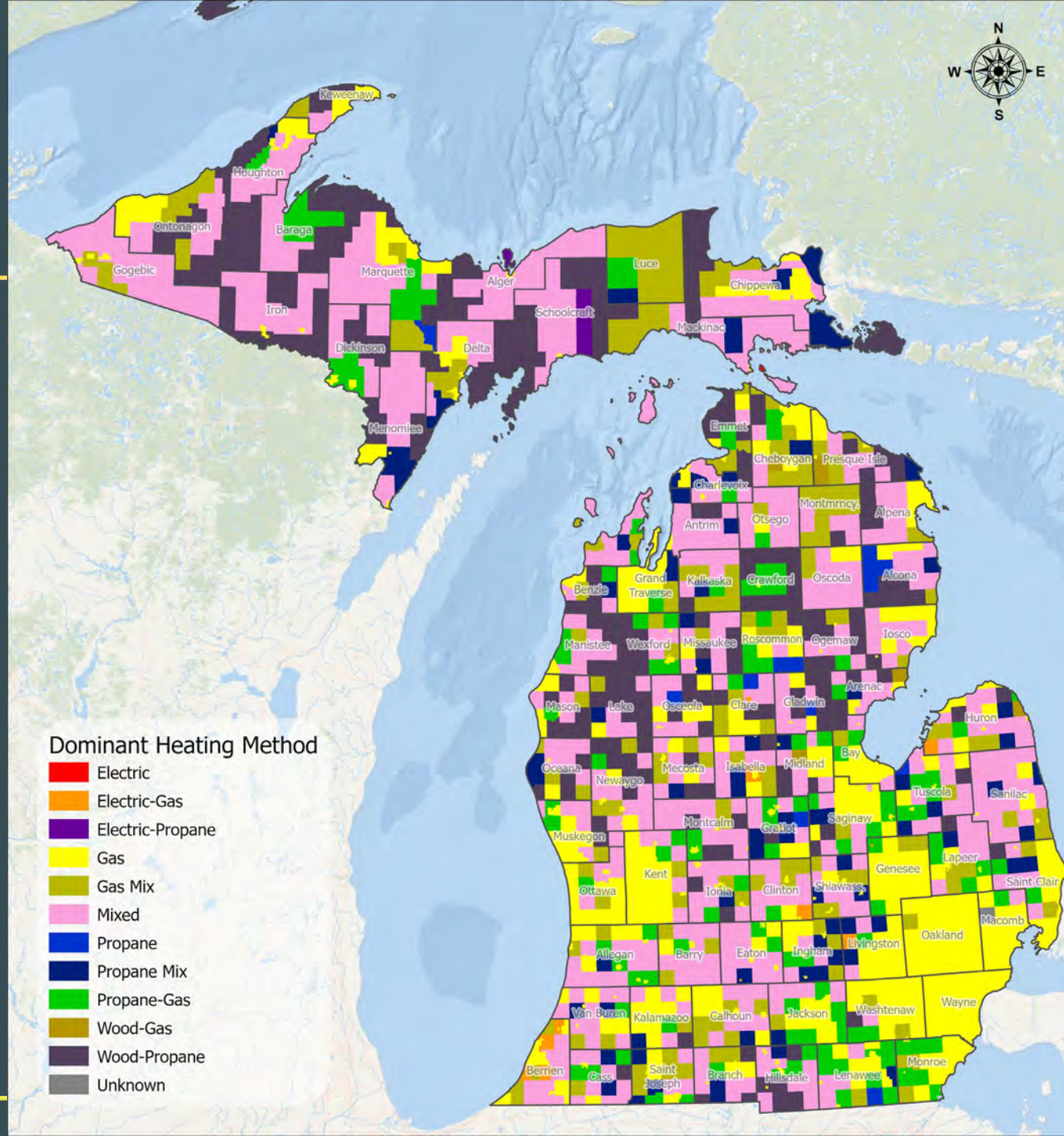
10% electric

8% propane

3% wood

Dominant Heating Method

- Electric
- Electric-Gas
- Electric-Propane
- Gas
- Gas Mix
- Mixed
- Propane
- Propane Mix
- Propane-Gas
- Wood-Gas
- Wood-Propane
- Unknown



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Transport

No Vehicles:

- 8% overall
- 10% 65+
- 19% of renters

59% two or more

Transport to Work

82% car commute alone

9% carpool

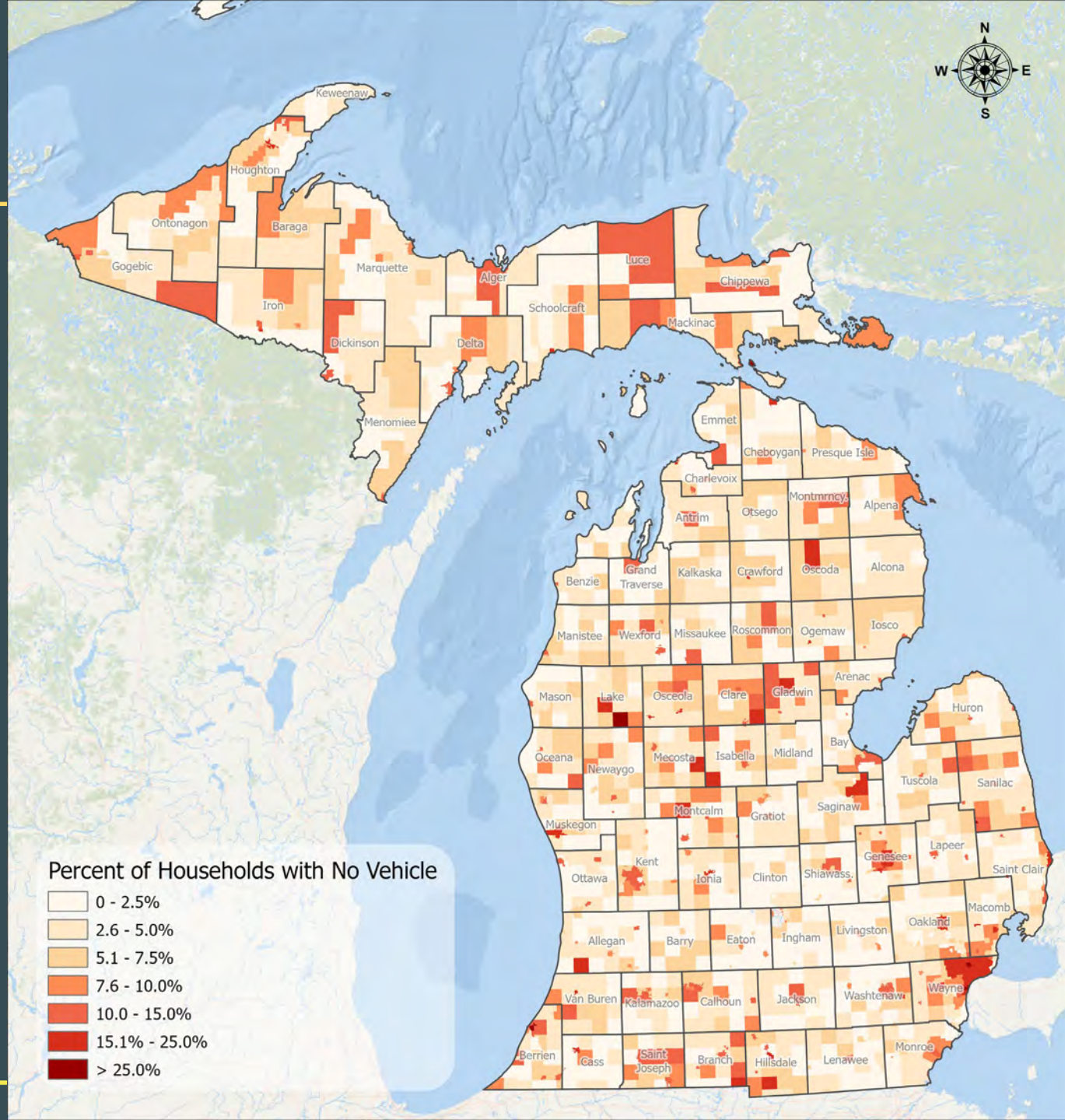
1.4% public

2.2% walk

1.3% other



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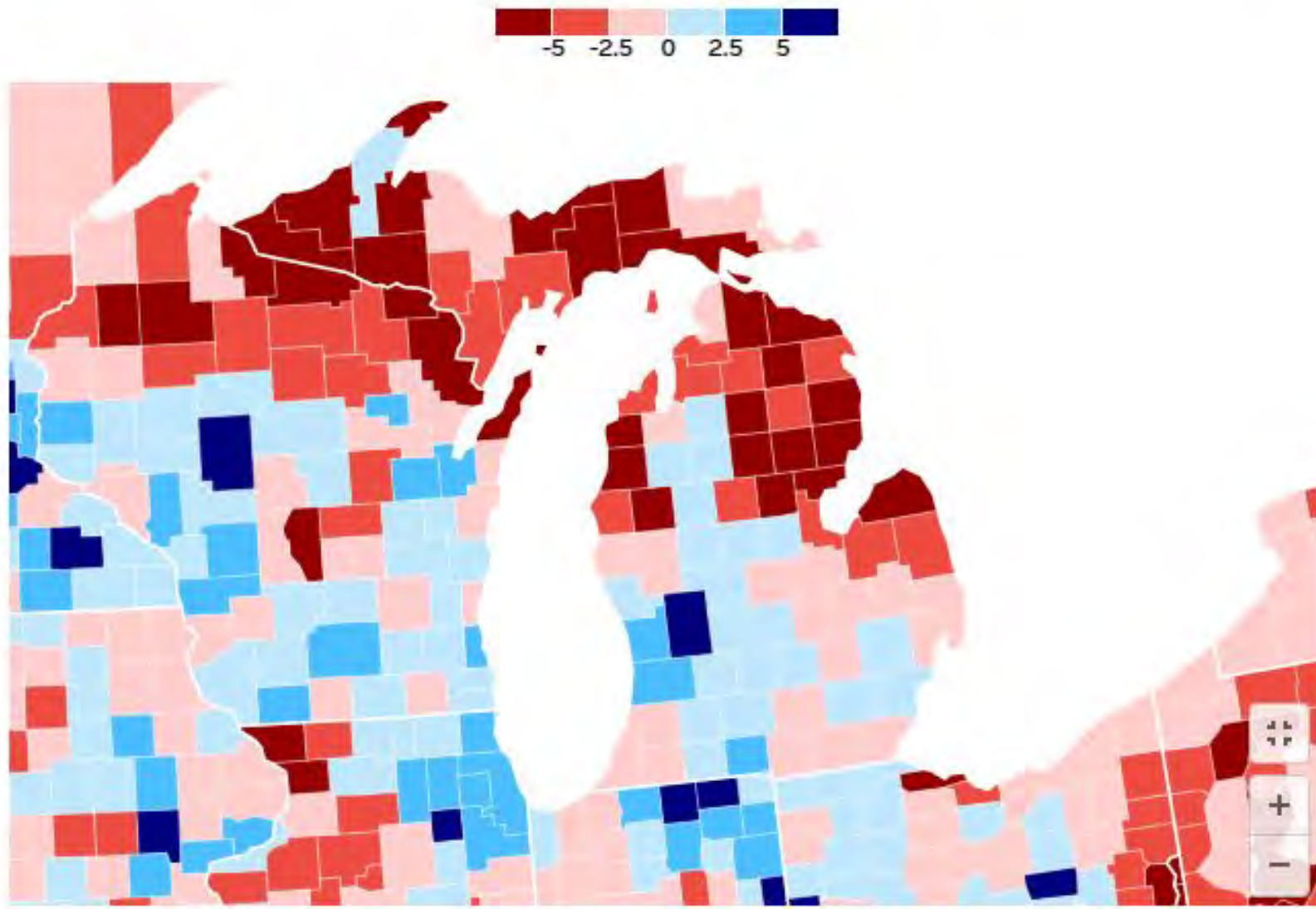
Summary Points

1. Slow population growth. Older housing.
2. Inequality & Spatial differences:
 - Urban centers vs Suburbs vs Rural
 - Heating - Diverse sources
 - Energy poverty is for real. Need to layer variables.
3. Different needs and plans for different people/places

References & Data Sources

- American Community Survey, 2015-2019
- Census 2010, 2020
 - Social Explorer
- US Energy Information Administration
- United for ALICE, 2019 State Overview
- Bureau of Labor Statistics, Local Area Unemployment Statistics
- rwinkler@mtu.edu

Natural increase per 1,000 residents, July 1, 2019 to June 30, 2020



Note: Natural increase (net births minus deaths) estimates were adjusted by each county's 2019 population.

Map: Madison Hoff/Insider • **Source:** US Census Bureau

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